Master programme in Statistics

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LUNDS
UNIVERSITET

Master programme

Vad är ett "Master programme"?
Breddmaster vs Djupmaster
Omfattning?
Innehållsmässigt resp. studieplatser.

Master programme

Ett två-årigt program med möjlighet till avgång efter ett år.
Ett ett-årigt program med möjlighet till utbyggnad till två år.

Master programme in Statistics

One-year Master Programme in Statistics, 60 ECTS
Two-year Master Programme in Statistics, 120 ECTS

"The Department of Statistics provides the options - you choose!"

Antal platser: 10 st

Programinnehåll: Kurser

1st year:

H	Multivariate Analysis 7.5	Statistical Computing 7.5
T	Financial Statistics 7.5	Micro Data Analysis 7.5
V	Analysis of Categorical Data 7.5	Time Series Econometrics 7.5
T	Master Thesis 15	

2nd year:

H	Probability Theory 15	
T	Statistical Theory 15	
V	Bootstrap 7.5	Spatial Statistics 7.5
T	Master Thesis 15	

Kurslitteratur

1:1 Johnson & Wichern: Applied Multivariate Statistical Analysis
1:2 Chapman: MATLAB Programming for Engineers
1:3 Hull: Options, Futures and Other Derivatives
1:4 Cameron & Trivedi: Microeconometrics: Methods and Applications.
1:5 Agresti: An Introduction to Categorical Data Analysis
1:6 Enders: Applied Econometric Time Series
2:1 Gut: An Intermediate Course in Probability
2:2 Garthwaite, Jolliffe & Jones: Statistical Inference
2:3 Efron & Tibshirani: An Introduction to Bootstrap
2:4 Banerjee, Carlin & Gelfand: Hierarchical Modeling and Analysis for Spatial Data

Multivariate Statistics

The central theme of the course is the multivariate general linear model, and statistical methods include multivariate hypothesis testing, principal component analysis, factor analysis, discriminant analysis, canonical correlation analysis, and multivariate analysis of variance and covariance and cluster analysis. The course covers theoretical, computational, and interpretive issues of multivariate techniques using computer solution.

Statistical Computing

A central theme of the course is algorithms and basic programming with emphasis on computer intensive problems in a statistical context such as random number generation, permutation tests, modelling, simulation methods and bootstrap.

Financial Statistics

The course develops student's theoretical and empirical grasp of the pricing of financial derivatives. Initially discrete time pricing is treated based on the concept of stochastic processes on binomial trees. Further we cover continuous time price theory using stochastic differential equations. We describe Black & Scholes model, various measures, martingale methods and measure theory. Finally we study numerical methods for pricing financial derivatives.

Micro Data Analysis

Introduction to the analysis of micro level data, i.e. data on the individual level being either cross-sectional data, longitudinal data (panel data), or survival or event history data.

Cross-sectional data. Key words: Binary outcomes; nominal outcomes, count outcomes; dependence on covariates; logistic regression, multinomial logit regression, Poisson and negative binomial regression; censoring;

Longitudinal data is repeated measurements on the same individuals over time, which allows us to see temporal changes without confounding by changes in the composition of the underlying population and incorporating the dependence of measurements within individuals. Various models for longitudinal data are discussed and the statistical analysis of these models is considered. Key words: Time-varying covariates; Generalized linear models for longitudinal data

Modern regression models for survival data and more generally event history data. Key words: Parametric and non-parametric estimation of survival functions, censoring, dependence on covariates, Cox proportional hazards model.

Analysis of Categorical Data

The central theme of the course in analysis of qualitative data, and statistical methods include loglinear models, Poisson regression models and logistic and probit regression models. The course covers theoretical, computational , and interpretive issues of qualitative data analysis techniques using computer solution.

Econometric Time Series

The topics of the course include time series regressions, asymptotic theory, univariate and multivariate stationary time series models (ARMA ans VAR models) , univariate and multivariate non-stationary time series models (unit root, cointegration), forecasting, conditional heteroscedasticity (ARCH and GARCH)

Studenter under åren

- HT2007
  ett-årigt
  två-årigt, 8 studenter:
- HT2008
  ett-årigt, 6 studenter:
- HT2009
  ett-årigt, 14 studenter:
- HT2010
  ettårigt, ?? studenter

Söktryck till programmet

	Initialt söktryck	Sökande med grundläggande beh.	Antagna	Uppslutning
2007	181		27+3	8 (4)
2008		38	30	6 (4)
2009	226	52	30	14 (8)
2010	253	?	-	-

Upptagningsområde

	Africa	America	Asia	China	Europe	Total
2007	12	2	5	5	3	27
2008	6	1	11	10	2	30
2009	9	2	14	4	1	30
2010						

Upptagningsområde: Uppslutning

	Africa	America	Asia	China	Europe	Total
2007	12	2(1)	5(2)	5	3(1)	27(4)
2008	6	1(1)	11(2)	10(1)	2	30(4)
2009	9	2	14(5)	4(2)	1(1)	30(8)
2010						

Antal studenter per kurs i programmet

	HT2007/08	HT2008/09	HT2009/10
Multivariate Analysis	15	7	25
Statistical Computing	11	15	27
Financial Statistics	8	10	27
Micro Data Analysis	39	29	41
Analysis of Categorical Data	19	X	28
Time Series Econometrics	19	10	
Probability Theory	X	11	X
Statistical Theory	X	12	X
Bootstrap	X	21	X
Spatial Statistics	X	9	X

Några exempel på masterkurser vid matematisk statistik

Monte Carlo methods for stochastic inference
Statistical Modelling of Extreme Values
Markov Processes
Survival Analysis
Design of Experiments
Statistical Image Analysis